Corporate Remediation Services



August 31, 1999

Ms. Romona Pezzella USEPA - Region II 290 Broadway - 19th Floor New York, NY 10007-1866 VIA FEDERAL EXPRESS

RE: Ciba Specialty Chemicals Toms River Site
Draft Feasibility Study Report for Operable Unit 2

Dear Ms. Pezzella:

Enclosed is the Draft Feasibility Study Report for Operable Unit 2, which is comprised of three (3) volumes. Volume 1 contains the report text and Volumes 2 and 3 contain the report appendices. Please note that the documentation for Appendices A-1, A-3, C, E-3-2 and F has not yet been completed and that these appendices will be sent in a subsequent submittal.

If you have any questions regarding this document, please contact me at (732) 914-2542, or Kim Schulze at (732) 914-2832.

Very truly yours,

Ciba Specialty Chemicals Corporation

wid K. Williams

David K. Williams Project Coordinator

> Oak Ridge Parkway P.O. Box 71 Toms River, NJ 08754-0071 Tel. 732 914 2500

c: Report With Appendices

I. Curtis, NJDEP

M. Cuker, Esq.

W. Eckel, Disposal Safety Inc.

S. Gesser, Ocean County Planning Department (2 copies)

P. Hibbard, OCCCW

R. Ingenito, Ocean County Health Department

C. Johnston, Ocean County Library (2 copies)

D. Jewett, USEPA/RSKEL

P. Philip, CDM

Report Only

B. Epstein, OCCCW

CD Electronic Copy

S. Gesser, Ocean County Planning Department

R. Pezzella, USEPA

D. Stapleton, USEPA

P. Philip, CDM

Cover Letter Only

Chief, Environmental and Enforcement Section Environment and Natural Resources Division U.S. Department of Justice P. O. Box 7611 Ben Franklin Station Washington, DC 20044 RE: CJ#90-11-2-289A

Chief, New Jersey Superfund Branch Office of Regional Counsel (USEPA - Region II 290 Broadway - 17th Floor New York, NY 10007-1866 ATT: CIBA-GEIGY Superfund Site Attorney

TABLE OF CONTENTS

INT	RODUCTION	1-1
1.1	Purpose	1-2
1.2	Organization of Report	1-3
BAC	CKGROUND	2-1
2.1	Site Description	2-1
2.2	Site Operations History	2-4
	2.2.1 Introduction	2-4
	2.2.2 Production Area Operational History	2-5
	2.2.3 Wastewater Treatment Plant Operational History	2-10
	2.2.4 Potential Source Areas Associated with Wastewater Treatment Operatio	ns 2-16
	2.2.5 Potential Source Areas Associated with Solid Waste Disposal	2-27
	2.2.6 Potential Source Areas Associated with Production-Related Activities	2-47
	2.2.7 Secondary Source Areas	2-49
2.3	Regulatory History	2-53
	2.3.1 Operable Unit 1	2-54
	2.3.2 Operable Unit 2	2-61
2.4	Current Site Conditions	2-64
SITI	E CHARACTERIZATION	3-1
3.1	Introduction	3-1
3.2	Site Geology and Hydrogeology	3-3
	3.2.1 Site Geology	3-3
	3.2.2 Site Hydrogeology	3-7
3.3	Aquifer Characterization	3-8
	3.3.1 Data Used in Aquifer Characterization	3-9
	3.3.2 Procedure for Interpolation of Data and Generation of Groundwater	
	Concentration Distributions	3-10
	3.3.3 General Description of Groundwater Contaminant Distribution	3-12
	3.3.4 Overall Conclusions of Groundwater Contaminant Distribution	3-18
3.4	Source Characterization.	3-68
	3.4.1 Statistical Characterization	3-68
	3.4.2 Data Used in Source Area Characterization	3-69
	3.4.3 Characterization of Source Areas	3-69
REN	MEDIAL ACTION OBJECTIVES	4-1
4.1	Introduction	4-1
4.2	Identification of Site-Specific Applicable or Relevant and Appropriate Requirement	ents
	and To Be Considered Requirements	4-1
	4.2.1 Definition of ARARs and TBCs	
	4.2.2 Identification of ARARs and TBCs for OU-2	
	4.2.3 ARAR Waivers	
4.3	Land Use	
	4.3.1 Site Conditions	
	4.3.2 Neighborhood Characteristics	4-19
	4.3.3 Potential Future Land Uses	4-21
4.4	Protection of Human Health and the Environment	4-21
	4.4.1 Introduction	4-21
	4.4.2 Risk Assessments	4-23
	4.4.3 Marshland Area	
	4.4.4 Source Area Impact on Groundwater	
4.5	Remedial Action Objectives for OU-2	4-35

TABLE OF CONTENTS

5.0	CON	AMINANT TRANSPORT MODEL	5-1
	5.1	Preface	5-1
	5.2	Objective and Approach	5-1
	5.3	Conceptual Model and Calibration	5-5
		5.3.1 The Groundwater Flow Model	
		5.3.2 The Contaminant Source and Transport Model	
	5.4	CTM Applications	5-86
		5.4.1 Baseline Time of Compliance	5-87
6.0	PREI	MINARY REMEDIATION GOALS	6-1
	6.1		6-1
	6.2	Volume-Based Remediation	6-1
	6.3	PRG Determination	6-2
		6.3.1 Example of PRG Determination at The Equalization Basins	6-3
	6.4	PRG Results	6-5
	6.5	CTM Analysis of PRGs	6-13
7.0	IDEN	TIFICATION AND SCREENING OF POTENTIAL REMEDIAL	
	TECI	NOLOGIES	7-1
	7.1	Introduction	7-1
		7.1.1 Technology Screening Factors and Process	7-1
	7.2	Remedial Technologies	7-2
		7.2.1 Containment	7-2
		7.2.2 In-Situ Treatment	7-9
		7.2.3 Ex-Situ Treatment	7-24
		7.2.4 Land Disposal	7-36
		7.2.5 Monitored Natural Attenuation	7-37
	7.3	Retained Technology Summary	7-39
8.0	DEV	LOPMENT OF FEASIBLE ALTERNATIVES	8-1
	8.1	Introduction	8-1
	8.2	List of Alternatives	8-5
		8.2.1 Remedial Actions Common to Two or More Alternatives	8-6
		8.2.2 Alternative Descriptions	8-8
9.0	DETA		9-1
	9.1	Introduction	9-1
	9.2	Evaluation Criteria	9-1
		9.2.1 Overall Protection of Human Health and the Environment	9-2
		9.2.2 Compliance with ARARs	9-2
		9.2.3 Long-Term Effectiveness and Permanence	
		9.2.4 Reduction of Toxicity, Mobility or Volume	9-3
		9.2.5 Short-Term Effectiveness	9-3
		9.2.6 Implementability	9-3
		9.2.7 Cost	9-3
		9.2.8 State Acceptance	9-4
		•	9-4
	9.3		9-4
		·	9-4
			9-7
			9-11
			9-15
			9-19
			9-23
			9-27
	9.4	Comparative Analysis of Alternatives.	

APPENDICES

Appenaix A	Site C	naracterization Reports
	A-1	Source Area Characterization Data
	A-2	Groundwater Profiling Study
	A-3	Supplemental Field Investigation Analytical Data
Appendix B	Ident	ification of ARARs and TBCs
Appendix C	Conta	aminant Transport Model Final Calibration Report
Appendix D	Deter	mination of Preliminary Remediation Goals
Appendix E	Treat	ability Study Reports
	E-1	Bioremediation Pilot Study
	E-2	Bioremediation Composting Study
	E-3	Laboratory Screening Studies
	E-3	3-1 Surrogate Compounds Study
	E-3	3-2 Co-Metabolic Study
	E-3	3-3 Chlorinated Benzenes Study
	E-4	Thermal Treatment Study
	E-5	Reactive Walls Study
Appendix F	Intrin	s ic Bioremediation Demonstration Study Report
Appendix G	Reme	edial Alternatives Cost Analysis Sheets

LIST OF FIGURES

<u>Figure No.</u>	<u>Title</u>	Follows Page No.
2-1	Ciba Location Map	2-1
2-2	Ciba Facility Adjacent Land Use	2-2
2-3	Locations Of Potential Source Areas	2-5
2-4	Production Area	2-6
2-5A	First Generation Wastewater Treatment Process Schematic	2-10
2-5B	Second Generation Wastewater Treatment Process Schematic	2-11
2-5C	Third Generation Wastewater Treatment Process Schematic	2-14
2-6	Potential Source Areas Associated With Wastewater Treatment Operations	2-17
2-7	Old Wastewater Treatment Plant And Old Oxidation Lagoon	2-18
2-8	East And West Equalization Basins	2-20
2-9	Backfilled Lagoon Area	2-23
2-10	Ocean Outfall Basin	2-25
2-11	Overflow Basin	2-27
2-12	East Overflow Area	2-28
2-13	Source Areas Associated With Waste Disposal	2-30
2-14	Filtercake Disposal Area	2-31
2-15	Lime Sludge Disposal Area	2-33
2-16	Drum Disposal Area	2-35
2-17	Standpipe Burner Area	2-40
2-18	Calcium Sulfate Disposal Area	2-42
2-19	Borrow Compactor Area	2-43
2-20	Casual Dumping Area	2-45

<u>Figure No.</u>	<u>Title</u>	Follows Page No.
2-21	Source Areas Associated With Production Activities	2-47
2-22	Building 108/UST Area And South Dye Area	2-49
2-23	Fire Training Area	2-50
2-24	Marshland Area	2-51
2-25	Location Of Extraction Wells And Recharge Areas (GERS)	2-56
2-26	Toms River Site Groundwater Treatment System	2-58
3-1	Top Of The Primary Cohansey	3-19
3-2	Middle Of The Primary Cohansey	3-20
3-3	Bottom Of The Primary Cohansey	3-21
3-4	Lower Cohansey	3-22
3-5	Kirkwood Number 1	3-23
3-6	Top Of The Primary Cohansey (Chlorobenzene)	3-24
3-7	Top Of Primary Cohansey (2-Chlorotoluene)	3-25
3-8	Top Of The Primary Cohansey (1,2-Dichlorobenzene)	3-26
3-9	Top Of The Primary Cohansey (1,2,4-Trichlorobenzene)	3-27
3-10	Top Of The Primary Cohansey (Trichloroethene)	3-28
3-11	Top Of The Primary Cohansey (Tetrachloroethene)	3-29
3-12	Top Of The Primary Cohansey (Trichloropropane)	3-30
3-13	Top Of The Primary Cohansey (Nitrobenzene)	3-31
3-14	Top Of The Primary Cohansey (Naphthalene)	3-32
3-15	Top Of The Primary Cohansey (ESD Exceedances)	3-33
3-16	Middle Of The Primary Cohansey (Chlorobenzene)	3-34

<u>Figure No.</u>	<u>Title</u>	<u>Follows Page No</u>
3-17	Middle Of The Primary Cohansey (2-Chlorotoluene)	3-35
3-18	Middle Of The Primary Cohansey (1,2-Dichlorobenzene)	3-36
3-19	Middle Of The Primary Cohansey (1,2,4-Trichlorobenzene)	3-37
3-20	Middle Of The Primary Cohansey (Trichloroethene)	3-38
3-21	Middle Of The Primary Cohansey (Tetrachloroethene)	3-39
3-22	Middle Of The Primary Cohansey (1,2,3-Trichloropropane)	3-40
3-23	Middle Of The Primary Cohansey (Naphthalene)	3-41
3-24	Middle Of The Primary Cohansey (Nitrobenzene)	3-42
3-25	Middle Of The Primary Cohansey (ESD Exceedances)	3-43
3-26	Bottom Of The Primary Cohansey (Chlorobenzene)	3-44
3-27	Bottom Of The Primary Cohansey (2-Chlorotoluene)	3-45
3-28	Bottom Of The Primary Cohansey (1,2-Dichlorobenzene)	3-46
3-29	Bottom Of The Primary Cohansey (1,2,4-Trichlorobenzene)	3-47
3-30	Bottom Of The Primary Cohansey (Trichloroethene)	3-48
3-31	Bottom Of The Primary Cohansey (Tetrachloroethene)	3-49
3-32	Bottom Of The Primary Cohansey (1,2,3-Trichloropropane)	3-50
3-33	Bottom Of The Primary Cohansey (Nitrobenzene)	3-51
3-34	Bottom Of The Primary Cohansey (Naphthalene)	3-52
3-35	Bottom Of The Primary Cohansey (ESD Exceedances)	3-53
3-36	Lower Cohansey (Chlorobenzene)	3-54
3-37	Lower Cohansey (2-Chlorotoluene)	3-55
3-38	Lower Cohansey (1,2,4-Tricholorbenzene)	3-56

<u>Figure No.</u>	<u>Title</u>	Follows Page No.
3-39	Lower Cohansey (1,2-Dichlorobenzene)	3-57
3-40	Lower Cohansey (Trichloroethene)	3-58
3-41	Lower Cohansey (Tetrachloroethene)	3-59
3-42	Lower Cohansey (1,2,3-Trichloropropane)	3-60
3-43	Lower Cohansey (Nitrobenzene)	3-61
3-44	Lower Cohansey (Naphthalene)	3-62
3-45	Lower Cohansey (ESD Excedances)	3-63
3-46	Top Of The Primary Cohansey (Metal COCs)	3-64
3-47	Middle Of The Primary Cohansey (Metal COCs)	3-65
3-48	Bottom Of The Primary Cohansey (Metal COCs)	3-66
3-49	Lower Cohansey Groundwater (Metal COCs)	3-67
3-50	Drum Disposal Area Color Coded Samples	3-76
3-51	Filtercake Disposal Area With Estimated Extent Of Residue Waste	3-80
3-52	Filtercake Disposal Area Color Coded Sample Locations	3-81
3-53	Old Wastewater Treatment Plant Area	3-84
3-54	Lime Sludge Disposal Area With Estimated Extent Of Residue Waste	3-88
3-55	Lime Sludge Disposal Area Color Coded Samples	3-89
3-56	Equalization Basins Color Coded Sample Locations Before Remediation	3-93
3-57	Backfilled Lagoon Area Sample Locations And Estimation Of Residual Waste Material	3-97
3-58	Backfilled Lagoon Area Color Coded Sample Locations	3-98
3-59	Former South Dye Area Color Coded Sample Locations	3-102
3-60	East Overflow Area Color Coded Sample Locations	3-105

Figure No.	<u>Title</u>	Follows Page No.
3-61	Borrow Compactor Area Color Coded Sample Locations	3-108
3-62	Former Building 108/UST Area Color Coded Sample Locations	3-111
3-63	Calcium Sulfate Disposal Area Color Coded Sample Locations	3-114
3-64	Casual Dumping Area Color Coded Sample Locations	3-117
3-65	Fire Prevention Area Color Coded Sample Locations	3-120
4-1	Ciba Toms River Facility Adjacent Land Use	4-19
4-2	Preliminary Future Land Use Conceptual Plan	4-21
4-3	Marshland Area	4-24
5-1	Flow Chart Of CTM Development Process	5-3
5-2	Flow Chart Of CTM Model Components	5-5
5-3	Conceptual Cross-Section Through The CTM Domain	5-7
5-4	Horizontal Extent Of The Groundwater Flow Model	5-8
5-5a	Comparison Between Predicted And Observed Water Levels In The North Part Of The Site	5-12
5-5b	Comparison Between Predicted And Observed Water Levels In The Southern Part Of The Site	5-13
5-6a	Flow Model Calibration Results In Primary Cohansey, Cross-Section In North Part Of Site	5-14
5-6b	Flow Model Calibration Results In Primary Cohansey, Cross-Section In Middle Part Of Site	5-15
5-6c	Flow Model Calibration Results In Primary Cohansey, Cross-Section In South Part Of Site	5-16
5-7	Example Of The Three Flow Zones Associated With Work Blocks	5-22
5-8	Horizontal Extent Of The Contaminant Transport Model	5-25
5-9	Natural Groundwater Flow Conditions At The Site, Map View	5-31

Figure No.	<u>Title</u>	Follows Page No.
5-10	Map View Of The South Plume Source Areas	5-33
5-11	Conceptual Drawing Of Leachate Flow From The Drum Disposal Area And Filtercake Disposal Area Into The Primary Cohansey Aquifer	5-34
5-12	Locations Of Soil Borings Providing Characterization Of The Yellow Clay In The South Plume	5-35
5-13	Locations Of Monitor Wells Screened In The Perched Water System In The South Plume	5-36
5-14	Locations Of Monitor Wells Screened In The Primary Cohansey In The South Plume	5-37
5-15	Locations Of Groundwater Profiles In The South Plume	5-38
5-16	Location Of South Plume Source Areas And Where Contaminant Mass Enters The Primary Cohansey Aquifer In The CTM	5-39
5-17	CTM Generated Groundwater Flow In The Primary Cohansey Prior To 1985, South Plume	5-45
5-18	CTM Predicted Groundwater Flow In The Primary Cohansey, 1/85 Through 10/95, South Plume	5-46
5-19	CTM Predicted Groundwater Flow In The Primary Cohansey, 10/95 Through Present, South Plume	5-47
5-20a	Chlorobenzene Trends Downgradient Of 1985 Purge Wells' Capture Zone In Primary Cohansey, South Plume	5-48
5-20b	Trichloroethene Trends Downgradient Of 1985 Purge Wells' Capture Zone In Primary Cohansey, South Plume	5-49
5-21a	Chlorobenzene Mass Extracted At Each Of South Plume Purge Wells, 1/85 Through 10/95	5-50
5-21b	1,2,4-Trichlorobenzene Mass Extracted At Each Of South Plume Purge Wells, 1/85 Through 10/95	5-51
5-22	Tetrachloroethene Mass Extracted At Each Of South Plume Purge Wells, 1/85 Through 10/95	5-52
5-23	Location Map Of North Plume Source Areas	5-55

Figure No.	<u>Title</u>	Follows Page No.
5-24	Locations Of Soil Borings Providing Characterization In North Plume Area	5-56
5-25	Locations Of Monitor Wells Screened In The Perched Water System, North Plume Area	5-57
5-26	Locations Of Monitor Wells Screened In The Primary Cohansey, North Plume Area	5-58
5-27	Locations Of Monitor Wells Screened In The Lower Cohansey, North Plume Area	5-59
5-28	Locations Of Groundwater Profiles In The North Plume Area	5-60
5-29	Location Of North Plume Source Areas And Where Contaminant Mass Enters The Primary Cohansey Aquifer In The CTM	5-61
5-30	Flow Conditions In North Plume Area, 1953-1960	5-64
5-31	Flow Conditions In North Plume Area, 1960-1985	5-65
5-32	Flow Conditions In North Plume Area, 1985 - 1995	5-66
5-33	Flow Conditions In North Plume Area, 1995 - Present	5-67
5-34a	Comparison Between Measured And Predicted Chlorobenzene Concentrations In Vicinity Of EQ Basins	5-70
5-34b	Comparison Between Measured And Predicted 2-Chlorotoluene Concentrations In Vicinity Of Equalization Basins	5-71
5-34c	Comparison Between Measured And Predicted 1,2-Dichlorobenzene Concentrations In Vicinity Of Equalization Basins	5-72
5-35a	Comparison Between Measured And Predicted Chlorobenzene Concentrations Emanating From The Former South Dye Area	5-74
5-35b	Comparison Between Measured And Predicted 2-Chlorotoluene Concentrations Emanating From The Former South Dye Area	5-75
5-35c	Comparison Between Measured And Predicted 1,2-Dichlorobenzene Concentrations Emanating From The Former South Dye Area	5-76

Figure No.	<u>Title</u>	Follows Page No.
5-36a	Comparison Between Measured And Predicted Chlorobenzene Concentrations Emanating From The Former Building 108/Underground Storage Tank Area	5-78
5-36b	Comparison Between Measured And Predicted 2-Chlorotoluene Concentrations Emanating From The Former Building 108/Underground Storage Tank Area	5-79
5-36c	Comparison Between Measured And Predicted 1,2-Dichlorobenzene Concentrations Emanating From The Former Building 108/Underground Storage Tank Area	5-80
5-37a	Comparison Between Measured And Predicted Chlorobenzene Concentrations Emanating From The Borrow Compactor Area	5-82
5-37b	Comparison Between Measured And Predicted Trichloroethene Concentrations Emanating From The Borrow Compactor Area	5-83
5-37c	Comparison Between Measured And Predicted Naphthalene Concentrations Emanating From The Borrow Compactor Area	5-84
5-38a	The Initial Condition For The 1,2,4-Trichlorobenzene Plume In The Bottom Of The Primary Cohansey	5-90
5-38b	The Initial Condition For The 1,2,4-Trichlorobenzene Plume In The Lower Cohansey	5-91
5-39a	The 1,2,4-Trichlorobenzene Plume After 5 Years In The Bottom Of The Primary Cohansey	5-92
5-39b	The 1,2,4-Trichlorobenzene Plume After 10 Years In The Bottom Of The Primary Cohansey	5-93
5-39c	The 1,2,4-Trichlorobenzene Plume After 20 Years In The Lower Cohansey	5-94
5-39d	The 1,2,4-Trichlorobenzene Plume After 30 Years In The Lower Cohansey	5-95
5-39e	The 1,2,4-Trichlorobenzene Plume After 40 Years In The Lower Cohansey	5-96
6-1	West Equalization Basin Unsaturated Zone, Excavated Volumes And Resulting Soil Concentrations And Groundwater Quality At The Source	6-3

Figure No.	<u>Title</u>	Follows Page No.
6-2	East Equalization Basin Unsaturated Zone, Excavated Volumes And Resulting Soil Concentrations And Groundwater Quality At The Source	6-4
6-3	Areas To Be Excavated	6-7
6-4	Source Areas To Be Treated In-Situ	6-8
6-5	Areas With Perched Water Control	6-9
6-6	Low Mass Areas	6-10
6-7	Block Model For The Drum Disposal Area/Standpipe Burner Area, Source Blocks To Be Remediated	6-11
6-8	Block Model For The Filtercake Disposal Area, Source Blocks To Be Remediated	6-12
6-9	Block Model For The Equalization Basins, Source Blocks To Be Remediated	6-13
6-10	Block Model For The Equalization Basins, Source Blocks For <i>In-Situ</i> Treatment	6-14
6-11	Block Model For The Backfilled Lagoon Area, Source Blocks To Be Remediated	6-15
6-12	Block Model For The Former South Dye Area, Source Blocks To Be Remediated	6-16
6-13	Block Model For The Former Building 108/UST Area, Source Blocks To Be Remediated	6-17
6-14	Borrow Compactor Area Blocks To Be Remediated	6-18
6-15a	Extent Of Chlorobenzene In Primary The Cohansey After 30 Years, No Source Remediation, Initially Clean Aquifer, GERS Operating	6-21
6-15b	Extent Of Chlorobenzene In The Primary Cohansey After 200 Years, No Source Remediation, Initially Clean Aquifer, GERS Operating	6-22
6-16a	Extent Of Chlorobenzene In The Primary Cohansey After 30 Years, With Source Remediation And GERS Operating	6-23

<u>Figure No.</u>	<u>Title</u>	Follows Page No.
6-16b	Extent Of Nitrobenzene In The Primary Cohansey After 30 Years, With Source Remediation And GERS Operating	6-24
6-16c	Extent Of Tetrachloroethene In The Primary Cohansey After 30 Years, With Source Remediation And GERS Operating	6-25
6-16d	Extent Of 1,2,4-Trichlorobenzene In The Primary Cohansey After 30 Years, With Source Remediation And GERS Operating	6-26
6-16e	Extent Of Trichloroethene In The Primary Cohansey After 30 Years, With Source Remediation And GERS Operating	6-27
6-16f	Extent Of 1,2,3-Trichloropropane In Primary Cohansey After 30 Years, With Remediation And GERS Operating	6-28
7-1	In-Situ Groundwater Treatment Using Reactive Wall Technology	7-6
7-2	In-Situ Bioremediation Using Groundwater Extraction And Air Sparging	7-15
7-3	In-Situ SVE System	7-18
7-4	Aerated Pile Composting System	7-27
7-5	Typical Thermal Desorption Unit For The Treatment Of Chlorinated Organics	7-34

LIST OF TABLES

<u> Fable No.</u>	<u>Title</u>	Follows Page No.
2-1	AOC/SOW Tasks for Feasibility Study	2-64
3-1	Source Area Designations	3-71
3-2	Statistical Summary for Drum Disposal Area/Standpipe Burner Area	3-76
3-3	Statistical Summary for the Filtercake Disposal Area	3-79
3-4	Statistical Summary for the Old Wastewater Treatment Plant Area	3-83
3-5	Statistical Summary for the Lime Sludge Disposal Area	3-87
3-6	Statistical Summary for the Equalization Basin	3-92
3-7	Statistical Summary for the Backfilled Lagoon Area	3-96
3-8	Statistical Summary for the Former South Dye Area	3-101
3-9	Statistical Summary for the East Overflow Area	3-104
3-10	Statistical Summary for the Borrow Compactor Area	3-107
3-11	Statistical Summary for the Former Building 108/UST Area	3-110
3-12	Statistical Summary for the Calcium Sulfate Disposal Area	3-113
3-13	Statistical Summary for the Casual Dumping Area	3-116
3-14	Statistical Summary for the Fire Training Prevention Area	3-119
4-1	Summary of Relevant ARARs and TBCs	4-5
4-2	Source Areas Evaluated in Surface Soils Risk Assessment	4-31
4-3	Risk Based Preliminary Remediation Goals (PRGs) for Commercial/Industrial Future Land Use	4-33
5-1	Summary Of The Components Of The Flow Model	5-9
5-2	Summary Of The Major Source Model Assumptions	5-19
5-3	Summary Of The Parameters That Define The Source Terms For The Transport Model	5-21

LIST OF TABLES (continued)

<u>Table No.</u>	<u>Title</u>	Follows Page No.
5-4	Transport Model Parameters And Estimation Basis	5-26
5-5	Relationship Between CTM Parameters And Groundwater Concentrations	5-28
5-6	How CTM Parameters Vary With Time	5-29
5-7	Data Used To Assess The Dissolved Mass Loading Entry Points To The Primary Cohansey	5-32
5-8	Data Used To Assess The Dissolved Mass Loading Entry Points To The Primary Cohansey In The North Plume	5-54
6-1	Summary Of Source Model Remediation Options	6-1
6-2	Area-Specific PRG Volumes	6-2
6-3	Summary Of The Three Remediation Categories As Applied To Each Source Area	6-5
6-4	Estimated Pounds Of COCs In The Source Areas	6-6
7-1	Retained Technologies	7-40
8-1	Classification Of Material To Be Remediated At The Site	8-1
8-2	Applicable Technologies By Type Of Material	8-3
8-3	Alternative 1: No Further Action	8-12
8-4	Alternative 2: Monitored Natural Attenuation Based Rememdiation	8-13
8-5	Alternative 3: Containment Based Remediation	8-14
8-6	Alternative 4: On-Site Thermal Treatment Based Remediation	8-15
8-7	Alternative 5: Biotreatment Based Remediation	8-16
8-8	Alternative 6: Off-Site Remediation Based Alternatives	8-17
8-9	Alternative 7: Combination Remedial Alternative	8-18
9-1	CERCLA Evaluation Criteria	9-1